A.D. 1859, 26th OCTOBER. N° 2443.

SPECIFICATION

OF

WILLIAM CLARK.

PREPARATION AND APPLICATION OF BATHS, &c.

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Preparation and Application of Baths, &c.

LETTERS PATENT to William Clark, of 53, Chancery Lane, in the County of Middlesex, Engineer & Patent Agent, for the Invention of "IMPROVEMENTS IN THE PREPARATION AND APPLICATION OF BATHS OR BATHING MEDIA, AND IN APPARATUS EMPLOYED THEREIN."—A communication from abroad by Emile Muller, of Paris, in the Empire of France, Civil Engineer.

Sealed the 11th April 1860, and dated the 26th October 1859.

PROVISIONAL SPECIFICATION left by the said William Clark at the Office of the Commissioners of Patents, with his Petition, on the 26th October 1859.

I, WILLIAM CLARK, of 53, Chancery Lane, in the County of Middlesex, Engineer and Patent Agent, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN THE PREPARATION AND APPLICATION OF BATHS OR BATHING MEDIA, AND IN APPARATUS EMPLOYED THEREIN," to be as follows:—

The quantity of liquid employed in a bath has been immaterial with regard to the hygienic or medical effect desired to be produced; for whether an individual be immersed in five gallons or fifty gallons of liquid, the action of the water on the skin and the absorption will be the same, provided the body of the bather be constantly moistened, the depth of water being unimportant.

The new system of baths, combined with their application, which forms the subject of this Invention, are chiefly intended to economize the amount of liquid used, & to produce new therapeutic effects. In ordinary baths, economy in the liquid is usually resorted to only to economize heat, but for mineral water baths, sea, or whey, or other baths in which certain substances are dissolved, any economy in the liquid would be of considerable importance. Mineral baths, sea, whey, or other such like baths applied on this improved system, may be employed in any locality with a few quarts of

liquid, thus enabling the general use of this hitherto restricted blessing. In this improved bath the liquid is economized by substituting aqueous precipitation similar to small rain, or what is commonly known as (Scotch mist,) for the water generally used for baths. The ordinary mode of balneation requires at least fifty gallons of water for each individual, while a bath with water applied in the form of a precipitation will only require about three quarts.

The "hydrofère," or hot mist bath, constitutes a shower bath, but with a hundred times less liquid. This improved system of baths also comprises a complete subdivision of the liquid employed, which should not, however, be reduced to steam, as vaporization deprives liquids of their most valuable properties, the effect produced by vapour baths being essentially different to that proposed by the system herein described. The subdivision of the liquid is effected by ordinary means. The following are among the methods employed:—1st., by causing the liquid to enter the bath in a rapid current of air, gas, or vapour; 2ndly, by causing jets of water to impinge with force against hard surfaces; 3rdly, by subjecting the liquid to centrifugal force; &, 4thly, by causing the liquid to pass through a filter. Any other means of subdividing the liquid may be adopted.

The bather carefully places himself in a closed box made of or surrounded by non-conducting materials; in some cases the box may be made double, and heated. The form of the box may be varied according to whether the bather requires to be entirely enclosed, or with his head unenclosed. A foot-warmer is employed to keep up the temperature of the feet; the liquid is then conducted into the case or bath, and reduced to the form of mist either by means of a current of air, gas, or vapour, or otherwise, as before explained. From the foregoing, this improved system of "hydrofère," or mist bath will be easily understood; the liquid of whatever kind may be forced or pumped up into the apparatus. This improved bath may in this manner be substituted for the ordinary shower baths, by precipitating the liquor in the form of rain or mist, while the method of application may be varied in a great number of ways.

The principal features of the Invention comprised in the present application, consist in, 1st, the novel use of liquids in the form of mist for baths; 2ndly, the production of the said mist on the entry of the liquid into the bath or case; 3rdly, the capability of applying one generator of the mist in common to several bath boxes; 4thly, the employment of any fluid for the transmission of the liquid mist, which is set in motion by ordinary means; 5thly, the application of what are termed breathing rooms of all kinds to bathing purposes, which has never before been attempted.

Among the various kinds of bath apparatus & methods of subdividing the

liquids employed, I will give a brief description of the one made use of in perfecting the apparatus, so that it may serve as a guide, and exemplify the practical nature of the Invention.

It will be unnecessary to enter into any details as to the local or collective peculiarities of the apparatus which comprise special arrangements of apparatus and the chambers or boxes, which must necessarily vary. In the apparatus herein-after described the subdivision of the water is effected by a current of air produced by a blower, pump, ventilator, or jet of steam. The air is heated, on its exit from the blowing apparatus, either by passing it through a series of tubes placed in a furnace, or by causing it to circulate in a tube surrounded with hot water or steam, or in any suitable manner. It may also be exhausted in a heated space, which will be sufficient in certain cases.

In the annexed Drawing, A represents a tube for conducting the forced current of heated air; B, air cylinder heated to a certain temperature, containing the liquid to be used, about three quarts, which about half fills it; C, wheel, having small cups E, put in motion by any suitable means. These cups, in turning round, convey the water into a channel F, in front of a nozzle conveying a stream of air, which forces the water into the tube G, and effects its complete subdivision, when it escapes from the orifice H, and is distributed in the bath box I. The size of orifice H should be in proportion to the quantity of liquid to be subdivided in a given time; in some cases it is about $\frac{3}{4}$ of an inch in diameter. The dotted lines in the Drawing shows another form of bath box; the inclination given to the jet in the box may be varied, as desired.

Another method, which dispenses with the use of the cup wheel, consists in the employment of a wick of cotton which draws up into the reservoir the three quarts of water to be conducted into the tube almost drop by drop to the orifice of the nozzle of compressed air at its entrance to the box. In this manner the subdivision is effected in a very easy manner, which would be of great service for certain descriptions of water or mixtures of liquids. When there are matters held in suspension in the water, it may be agitated by the force of a spring or weight. The wick above described may be replaced by two small capillary tubes, with orifices opposed the one to the other; the flow of water will be very slow, almost drop by drop, and may be regulated by a level so as to furnish the exact quantity required. The liquid may be further supplied to the subdividing jet by means of a cock, which is regulated so as to supply any quantity at will; in all cases the reservoir containing the liquid for the bath should be arranged so as to be heated by a bath heater, or in any other manner. The cover of the box is supplied with points or pro-

jections, acting as conductors of the liquid in its descent, for the purpose of spreading the aqueous precipitations; a grating protects the bather from these points. The inclination of the cover allows of more condensed water being directed to any given point when the bather has his head enclosed in the box; this is made of a peculiar form, and the front part is glazed.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said William Clark in the Great Seal Patent Office on the 25th April 1860.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM CLARK, of 53, Chancery Lane, in the County of Middlesex, Engineer & Patent Agent, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-sixth day of October, in the year of our Lord One thousand eight hundred and fifty-nine, in the twenty-third year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said William Clark, Her special licence that I, the said William Clark, my executors, administrators, and assigns, or such others as I, the said William Clark, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE PREPARATION AND APPLICATION OF BATHS OR BATHING MEDIA, & IN APPARATUS EMPLOYED THEREIN," a communication from abroad by Emile Muller, of Paris, in the Empire of France, Civil Engineer, upon the condition (amongst others) that I, the said William Clark, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said William Clark, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Sheet of Drawings hereunto annexed, and to the letters and figures marked thereon (that is to say):—

Clark's Improvements in the Preparation and Application of Baths, &c.

The quantity of liquid employed in a bath is immaterial with regard to the hygeinic or medical effect desired to be produced, for whether an individual be immersed in five gallons or fifty gallons of liquid, the action of the water on the skin and the absorbtion will be the same, provided the body of the bather be kept constantly moistened; the depth of the water is, therefore, unimportant.

The new system of baths, combined with their application, which forms the subject of this Invention, is chiefly intended to economize the amount of liquid used to procure new therapeutic effects. In ordinary baths, economy in the liquid is usually resorted to only to economize heat, and is of no great importance, whereas for mineral water baths, sea water, or whey, or other baths in which certain substances are dissolved, economy in the liquid becomes of considerable importance. Mineral baths, sea water, whey, or other such like baths applied on this improved system may be employed in any locality with a few quarts, thus enabling the general use of this hitherto restricted blessing. In this improved bath the liquid is economized by substituting aqueous precipitations similar to small rain, or what is commonly known as Scotch mist, instead of the water generally used in baths. The ordinary mode of balneation requires at least fifty gallons of water for each individual, while a bath with the water applied in the form of a precipitation will only require about three quarts.

The "hydrofère," or hot mist bath, constitutes a shower bath, but does not require a hundredth part of the liquid necessary for shower baths. This improved system of bath also comprises a complete subdivision of the liquid employed, which should not, however, be reduced to vapour, as vaporization deprives liquids of their most valuable properties, the effect produced by vapour baths being essentially different to that proposed by the system herein described. By reason of the affinity the molecules of water have to each other, each drop of water will weigh about one grain, and this normal drop should be dispersed into an infinite number of almost imperceptible globules. The subdivision of the liquid is effected by ordinary means. The following are among the methods employed:—1st, by causing the liquid to enter the bath in a rapid current of air, gas, or vapour; 2ndly, by causing jets of water to impinge with force against hard surfaces; 3rdly, by subjecting the liquid to centrifugal force; 4thly, causing the liquid to pass through a filter. Any other means of subdividing the liquid may be adopted, the water being always administered in the form of extremely small and thick rain.

The bather carefully places himself in a closed box made of or surrounded by non-conducting materials. In some cases the box may be made double,

and heated. The form of the box may be varied according to whether the bather requires to be entirely enclosed, or with his head unenclosed. A foot warmer is employed during the bath, to keep up the temperature of the feet. The liquid is then conducted into the case or bath, and reduced to the form of mist, either by means of a current of air, gas, or vapour, or otherwise, as before explained. From the foregoing, this improved system of hydrofère, or mist bath, will be readily understood. The liquid, of whatever kind, may be forced or pumped up into the apparatus. This improved bath may in this manner be substituted for the ordinary shower baths, by precipitating the liquid in the form of rain or mist, while the method of application may be varied in a great number of ways.

The principal features of this Invention consists in, 1st, the novel use of liquids in the form of mist for baths; 2ndly, the production of the said mist on the entry of the liquid into the bath or case; 3rdly, the capability of applying one generator of the mist in common to several bath boxes; 4thly, the employment of any kind of liquid for the transmission and distribution of the liquid mist, which fluid is set in motion by any means; 5thly, the application of what are termed breathing rooms of all kinds to bathing purposes, which has never been before attempted.

Among the various kinds of bath apparatus and methods of subdividing the liquids employed, I will give a brief description of the one made use of in perfecting the apparatus, so that it may serve as a guide, and exemplify the practical nature of the Invention.

It will be unnecessary to enter into any details as to the local or collective peculiarities of the apparatus, which comprise special arrangements of apparatus, and the chambers or boxes, which must necessarily vary. In the apparatus herein-before described, the subdivision of the water is effected by a current of air produced by a blower, pump, ventilator, or jet of steam. The air is heated on its exit from the blowing apparatus, either by passing it through a series of tubes placed in a furnace, or by causing it to circulate in a tube surrounded with hot water or steam, or in any suitable manner; it may also be obtained from a heated chamber, which will be sufficient in certain cases.

In the annexed Drawing, Sheet 1, A represents a tube for conducting the forced current of heated air; B, cylinder heated to a certain temperature for containing the liquid to be used, about three quarts, which about half fills it; C, wheel, having small cups E, put in motion by any suitable means. These cups in turning round convey the water into a channel F in front of a nozzle conveying a stream of air, which forces the water into the tube G, and effects

its complete subdivision, when it escapes from the orifice H it becomes distributed in the bath box I. The size of orifice H should be in proportion to the quantity of liquid to be subdivided in a given time; in some cases it is about one-sixteenth of an inch in diameter. The dotted lines in the Drawing show another form of bath box. The inclination given to the jet in the box may be varied as desired.

Another method, which dispenses with the use of the cup wheel, consists in the employment of a cotton wick, which draws up into the reservoir the three quarts of water to be conducted into the tube almost drop by drop to the orifice of escape of the compressed air at its entrance to the box. In this manner the subdivision is effected in a very easy manner, which is of great service for certain descriptions of water or mixtures of liquids. When there are matters held in suspension in the water, it may be agitated by the force of a spring or weight. The wick above described may be replaced by two small capillary tubes, with orifices opposed the one to the other. The flow of water should be very slow, almost drop by drop, and may be regulated by a level or head of water so as to furnish the exact quantity required. The liquid may be further supplied to the subdividing jet by means of a cock, which is regulated so as to supply any quantity at will. In all cases the reservoir containing the liquid for the bath should be arranged so as to be heated by a bath heater or in any other manner. When the bather has his head enclosed in the box, this is made of a peculiar form, and the front part is glazed.

The principle forming the basis of the present Invention being thus determined, it will be unnecessary to give details of other methods of subdividing the liquids, such as by percussion against hard substances, centrifugal force, filtration, or other suitable means. The form of bath box or its accessories, and the method of heating, if required to be heated, the flow of the water, and the cocks for the supply of air, water, or other fluid may all be varied according to circumstances. I will further add a description of apparatus which I use for this mode of balneation, and in which I have adopted the method of subdivision of the water produced by the blowing machine.

Sheet 2, A, vessel containing the liquid to be employed for the bath; B, vessel of larger size for receiving warm water up to the point indicated by the letter C. This vessel is completely enclosed in wood to preserve as much as possible the warmth of the water it contains or the liquid intended to be subdivided, and also of the air which serves for the subdivision. D, tube for the introduction of water into the vessel A; E, funnel for the introduction of warm water into the vessel B; F, outlet cock of vessel A; G, outlet cock of vessel B; H, inlet tube for the passage of air into the vessel B. This air,

which occupies the upper part of the vessel, is supplied under pressure by the action of a blower, pump, or other suitable machine, which is kept in action during the whole time of bathing. I, tube which conducts air to the bath box; J, small tube which conducts the liquid of the bath into the current of air; K, point of meeting of the liquid and jets of air; L, exit orifice of the subdivided liquid; M, stop cock; N, cock which regulates the flow of the liquid. In the plug of this cock is fitted a capsule O, pierced with a small hole which allows exactly the desired quantity of water to pass; by applying capsules, with perforations of different sizes, the quantity of water may be varied at will. The plugs of the cocks of tube D and tube H are bored in opposite directions on an axis common to both, in such way that D is shut when H is opened, and vice versa. The axis of these taps may communicate with a registering apparatus placed in box P, which will indicate the number of movements communicated to the axis, and consequently the number of baths administered. Q, bath box; R, seat in the bath; S, metallic seating enclosing the bottom of the box; T, grated floor placed at a little distance above the seating S. The minute subdivision of the liquid produces a coolness which results, among other causes, from the conversion of a part of the liquid into vapour. To prevent this effect, which might be disagreeable, I saturate previously with steam the air contained in the box Q, and commence the sub-division of the water a few minutes before the bath, or it may be prevented by throwing a certain quantity of warm water against the sides of the box Q and in the casing V. I previously close, by means of a cover, the opening made on the top of the box so as to prevent the escape of the vapour. This last apparatus may be easier of application for the purposes of balneation than the former.

In witness whereof, I, the said William Clark, have hereunto set my hand and seal, this Twenty-fifth day of April, in the year of our Lord One thousand eight hundred and sixty.

W. CLARK. (L.S.)

Witness,

JAMES DAISH,

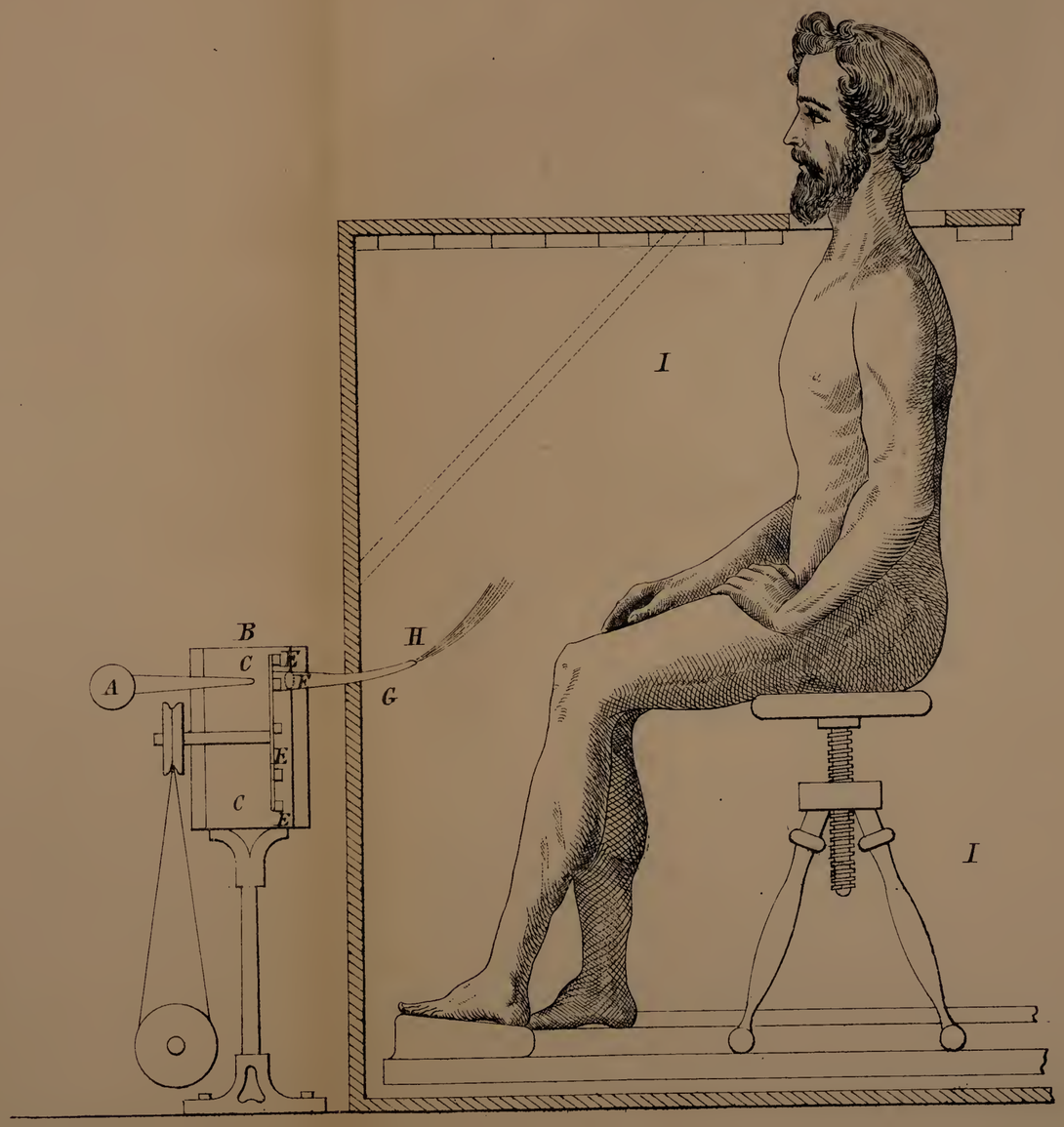
53, Chancery Lane,

London.

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1860.

A.D. 1859. Oct. 26. N° 2443.
CLARK'S Provisional Specification.

(1 SHEET)



The drawing left with Provisional Specification is not colored.

Drawn on Stone by Malby & Sons.

London: Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1860.

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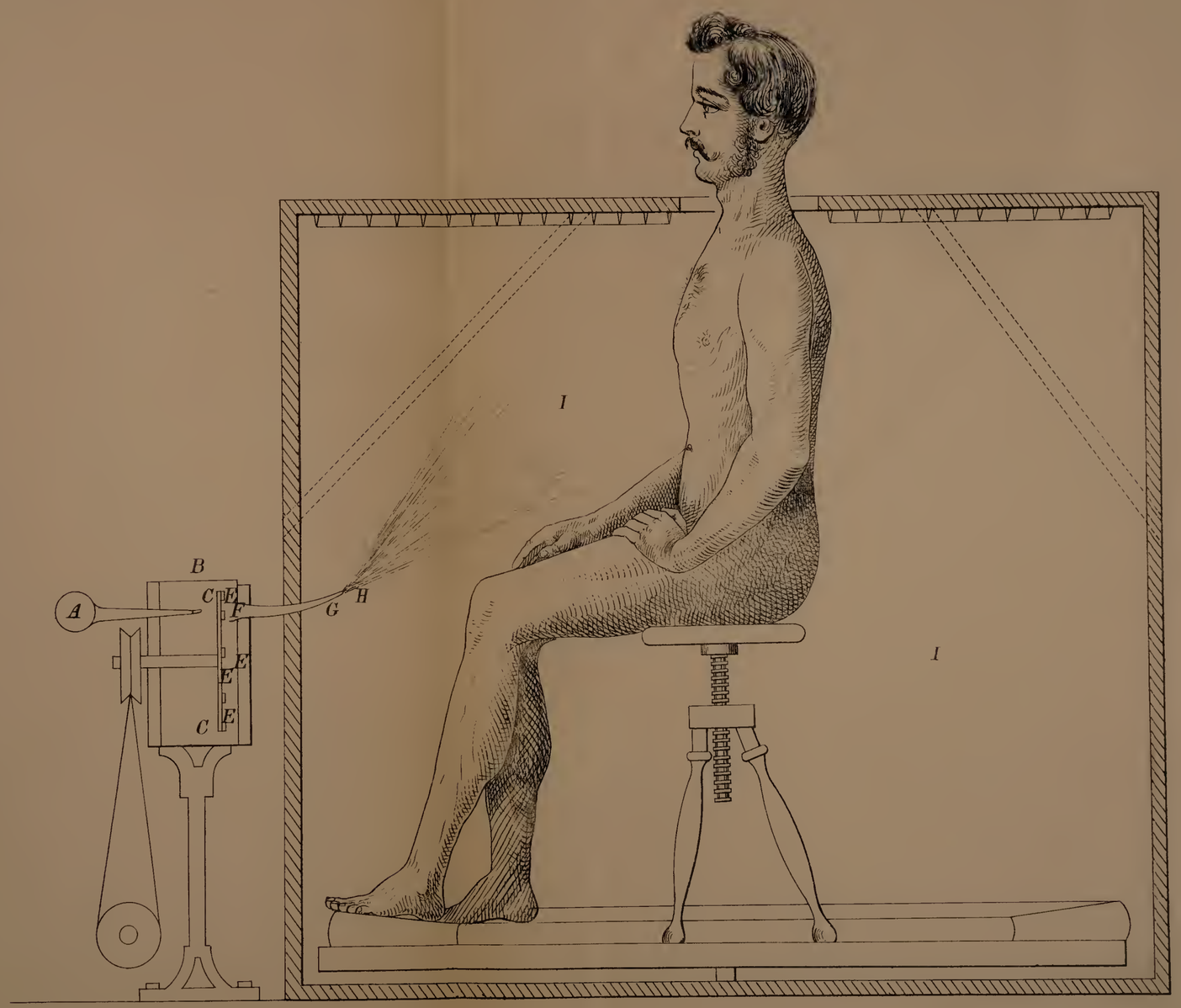
CLARK'S Specification.

(2 SHEETS)
SHEET 1.



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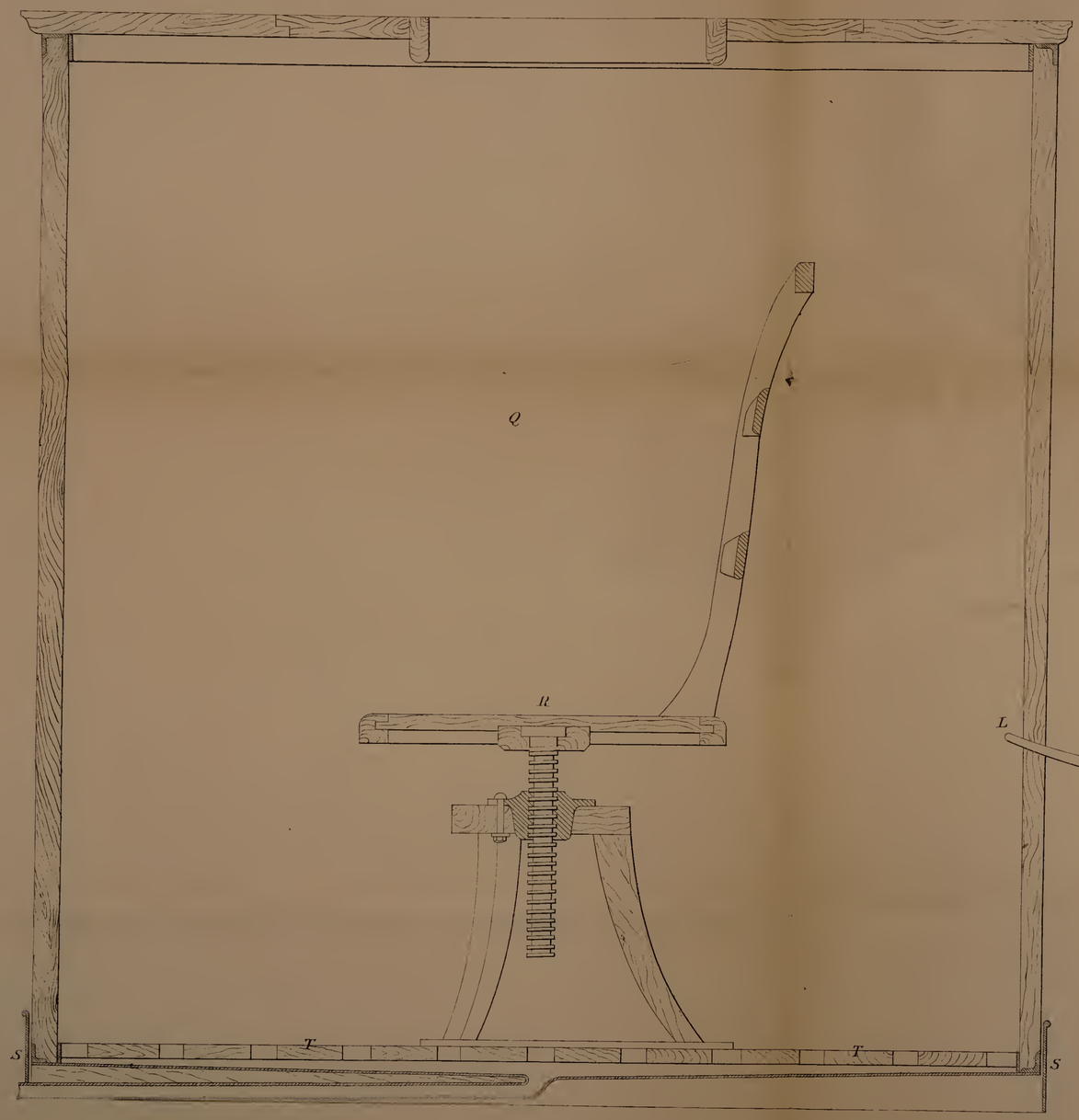

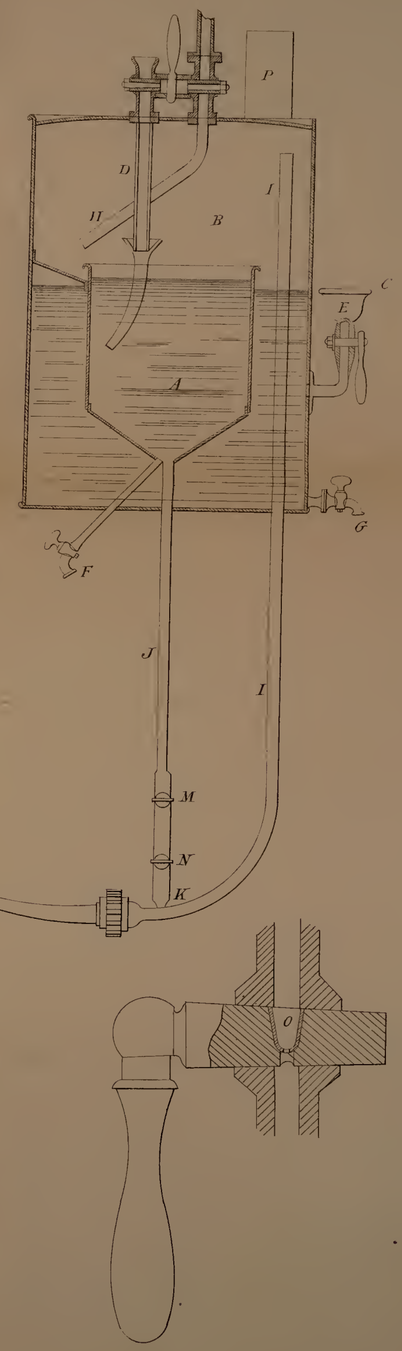

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